CLAIMS

1. A system for the electrical regulation of a device for transmission of power between, on one side, the thermal engine (1) and a pair of electrical machines (4a, 4b) equipping an automobile vehicle, and on the other, its drive wheels (2), the thermal engine (1) being connected to the two electrical machines (4a, 4b) by means of a mechanical assembly (3), whereas an electrical connecting device (6, 60a; 61a-60b; 61b, 5a-5b, 50a-50b) situated between the two electrical machines provides a direct passage for power from one machine to the other, without a significant intermediate energy storage or recovery element, this connecting device (6, 60a; 61a-60b; 61b, 5a-5b, 50a-50b) being controlled such that the power generated by one of the two electrical machines (4a; 4b) is immediately consumed by the other (4b; 4a), and in order that the two electrical machines (4a, 4b) respond to the requirements of the drive train, the connection providing the transfer of electrical power between the two electrical machines and achieving this by means of two inverters (5a, 5b), each one being associated with one electrical machine (4a, 4b), these two inverters being connected to a bus (6) whose two lines are connected via a capacitor (62), characterized in that, on the one hand, it is designed to ensure that the voltage (**V**) across the terminals of the capacitor be continuously maintained at a given setpoint value (**Vref**), called 'voltage setpoint value', and on the other, that it is capable of acting on the torque of each of the two electrical machines, either separately or simultaneously, and in any case continuously, in response to the error signal resulting from the comparison of the measured value of this voltage with respect to said setpoint value (**Vref**).

2. The system for electrical regulation of a power transmission device as claimed in claim 1, characterized in that a value Σ, called 'electrical setpoint value', is produced by a corrector device (85) from the error in the voltage value of the capacitor (62) with respect to the setpoint value.

3. The system for electrical regulation of a power transmission device as claimed in claim 2, characterized in that the sum **Ca**.ω**a** + **Cb**.ω**b** remains continuously equal, or substantially equal, to said value referred to as 'electrical setpoint value' Σ, **Ca** and **Cb** being the values of the torques respectively delivered by each of the two electrical machines (4a, 4b), whereas ω**a** and ω**b** are the regime values (rotation speeds) of each of these machines.

4. The system for electrical regulation of a power transmission device as claimed in one of claims 1 to 3, characterized in that it disposes of one free input corresponding to a value **M**, referred to as 'mechanical setpoint value', that is defined for the transmission.

5. The system for electrical regulation of a power transmission device as claimed in claim 4, characterized in that the regulation is performed by resolving either a system of two equations with two unknowns **Ca** and **Cb**, **Ca** and **Cb** being the torque values respectively delivered by each of the two electrical machines (4a, 4b), when these machines are not in torque limit, or a system comprising one equation and one inequality with two unknowns **Ca** and **Cb** in the other situations, so as to continuously ensure that the sum **Ca**.ω**a** + **Cb**.ω**b** remains continuously equal, or substantially equal, to a given value Σ, called 'electrical setpoint value', and that the value of the controlled mechanical quantity is as close as possible to said mechanical setpoint value **M**.

6. The system for electrical regulation of

a power transmission device as claimed in one of claims 1 to 4, characterized in that the transfer of power between the two electrical machines (4a, 4b) is reversible